

# Aircraft Icing Hazard Management LIDAR for Take-Off and Landing Safety, Phase I

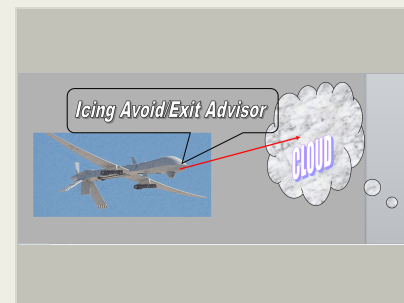
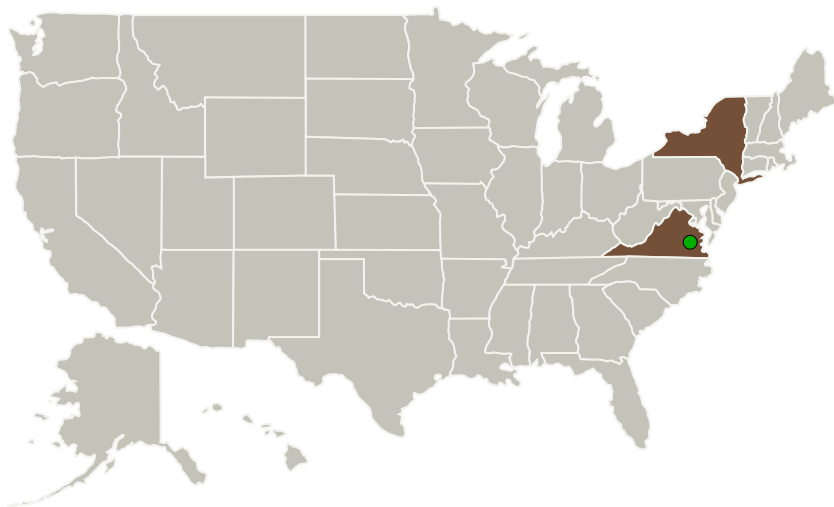
Completed Technology Project (2017 - 2017)



## Project Introduction

There is a need for technologies focused on increasing the efficiency and safety of UAV operations for the first and last 50 feet, and under diverse weather conditions. UAV's are not typically equipped for icing avoidance and many have been lost close to airports when encountering icing hazards or un-forecasted weather conditions. Current aircraft weather radars that operate at X-band (8-12 GHz) have limited or no ability to help pilots detect and quantify icing potential due to atmospheric attenuation. Use of 3D LIDAR technology for ice and snow avoidance could significantly expand the mission envelope of aircraft and UAV's during cold weather operations. IDI is proposing development of a multi-channel 3D LIDAR that will identify low altitude cloud layers - as well as provide runway surface hazard information for UAV's. Unique wavelengths are chosen to identify both cloud moisture content and runway surface contaminants (ice, water, snow, slush) within the local surroundings of the aircraft. During the Phase I IDI will demonstrate a 3D scanning LIDAR in the icing chamber with multiple wavelengths and multiple channels. The LIDAR design will be optimized and packaged to meet the desired range and accuracy requirements during the Phase 2 program.

## Primary U.S. Work Locations and Key Partners



Aircraft Icing Hazard Management LIDAR for Take-off and Landing Safety, Phase I Briefing Chart Image

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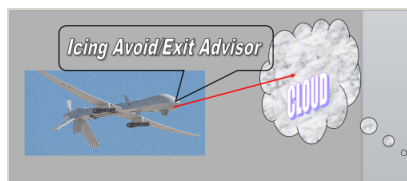


Organizations Performing Work	Role	Type	Location
Innovative Dynamics, Inc.	Lead Organization	Industry	Ithaca, New York
● Langley Research Center(LaRC)	Supporting Organization	NASA Center	Hampton, Virginia

## Primary U.S. Work Locations

New York	Virginia
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## Images



### Briefing Chart Image

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(<https://techport.nasa.gov/image/131305>)

## Organizational Responsibility

### Responsible Mission Directorate:

Space Technology Mission Directorate (STMD)

### Lead Organization:

Innovative Dynamics, Inc.

### Responsible Program:

Small Business Innovation Research/Small Business Tech Transfer

## Project Management

### Program Director:

Jason L Kessler

### Program Manager:

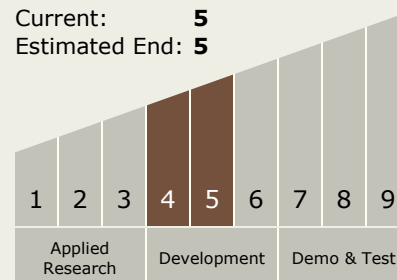
Carlos Torrez

### Principal Investigator:

Joseph Gerardi

## Technology Maturity (TRL)

Start: 4  
Current: 5  
Estimated End: 5



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## Technology Areas

### Primary:

- TX01 Propulsion Systems
  - └ TX01.3 Aero Propulsion
    - └ TX01.3.11 Engine Icing

## Target Destinations

The Sun, Earth, The Moon, Mars, Others Inside the Solar System, Outside the Solar System